



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,656	09/29/2004	Toshio Goto	I01250.55460US	2287

23911 7590 11/06/2007  
CROWELL & MORING LLP  
INTELLECTUAL PROPERTY GROUP  
P.O. BOX 14300  
WASHINGTON, DC 20044-4300

EXAMINER
----------

KACKAR, RAM N

ART UNIT	PAPER NUMBER
----------	--------------

1792

MAIL DATE	DELIVERY MODE
-----------	---------------

11/06/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/509,656	Applicant(s) GOTO ET AL.	
	Examiner Ram N. Kackar	Art Unit 1763	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 September 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,4-7 and 9-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-7 and 9-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/7/07</u> | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/13/2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. **Claims 1-2, 4, 7, 9-12 and 16-19 are rejected under 35 U.S.C. 103(a) as unpatentable over O'Neill et al (US 5770097) in view of Paul E. Cade (US 3734620).**

O'Neill et al disclose a processing apparatus (Fig 1) which accommodates a target object (22), ultraviolet light generating means (52), ultraviolet light receiving means (66), analysis/control means (78, 86) using uv absorption spectroscopy (Abstract) and chopper for intermittently outputting uv (68). It is further taught that from the received light density of radicals (concentration of species) is obtained and this information is used to control an RF power supply (Fig 1, 78 and 42).

Art Unit: 1792

Regarding the limitation of intermittently outputting the ultraviolet light with a presence/absence signal and further regarding calculation of difference between presence and absence signal, this is the standard and inherent way a chopper works with a lock-in amplifier. Chopper and lock-in amplifier is used to improve signal/noise ratio by reducing or eliminating noise from the signal (Col 5 lines 1-12). This is advantageous especially if the signal is weak.

O'Neill et al do not explicitly disclose measurement of temperature of molecular or atomic radicals and correction of density measurement by using temperature information.

Paul E. Cade disclose a processing apparatus (Fig 1, 10) which accommodates a target object (17), light generating means (20), light receiving means (25a and 25b), analysis/control means (74) using absorption spectroscopy (Abstract) and chopper for intermittently outputting the light (Col 4 lines 1-25). Paul E. Cade teaches that the absorption spectrum is a function of temperature and density of gas (Col 1 lines 48-53). Paul E. Cade discloses the output of the amplifier 39 and 49 as in Fig 2 which is derived from amplifiers 26a and 26b to be equal to  $n/\sqrt{T}$  where n represents density and T represents temperature (Col 9 lines 40-45). Further output of amplifier 54 (Fig 2) is equal to  $\sqrt{T}$ . From these outputs the correct density is obtained after temperature is found out.

Since it is known that optical information is a function of density and temperature, it would have been obvious for one of ordinary skill in the art at the time of invention to find radical density corrected by temperature.

**4. Claims 4-5, and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) in view of Paul E. Cade (US 3734620) as applied to claims 1-2, 4, 7, 9-12 and 16-19 and further in view of Pinsukanjana et al (US 5936716).**

O'Neill et al in view of Paul E. Cade disclose all the limitations of these claims except multiple optical paths having different modulation frequencies.

Pinsukanjana et al disclose multi-channel atomic absorption spectroscopy with dedicated modulators at different frequencies and dedicated detectors with lock-in amplifiers (Abstract, Fig 1-Fig 23, Col 3 lines 26-37 and Col 5 lines 22-65).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have multi-channel optical paths for spatial detection and/ or species distribution in the detection environment.

**5. Claims 6-7 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Neill et al (US 5770097) in view of Paul E. Cade (US 3734620) as applied to claims 1-2, 4, 7, 9-12 and 16-19 and further in view of Yoshida et al (JP 06293960A).**

O'Neill et al in view of Paul E. Cade disclose all the limitations of these claims except disclose that the window is heated.

However controlling the window temperature to inhibit condensation on window would have been obvious to one of ordinary skill in the art at the time of invention as taught by Yoshida et al.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to have the detection window heated to avoid condensation and clouding of the window.

***Response to Arguments***

Applicant's arguments filed 9/13/2007 have been fully considered but they are now moot in view of new grounds of rejection.

***Conclusion***

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

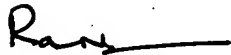
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ram N. Kackar whose telephone number is 571 272 1436. The examiner can normally be reached on M-F 8:00 A.M to 5:P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571 272 1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1792

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Ram Kackar

Primary Examiner AU 1792